

IN THE DRAWINGS:

The attached sheets of drawings include changes to FIGS. 6A, 9D and 11B. These sheets, which include FIGS. 6A-6D, 7; 9A-9F; and 10A-10C, 11A and 11B, replace all previous drawing sheets submitted for these figures. In FIG. 6A, distance line "284" has been changed to --285--; FIG. 9D has been revised to change reference numeral 494 (second occurrence) to 496; and FIG. 11B has been revised to change reference numerals 596 (four occurrences) to 597 and reference numeral 594 (second occurrence) to 596. (See attached Replacement Sheet(s) and Annotated Sheet(s) Showing Changes.)

REMARKS/ARGUMENTS

The Office Action mailed June 7, 2006, has been received and reviewed. Claims 1 through 40 are currently pending in the application. Claims 4 through 6, 11, 12, 14 through 19, and 26 through 39 are withdrawn from consideration as being drawn to non-elected invention(s). Claims 1 through 3, 7 through 10, 13, 20 through 25, and 40 stand rejected.

Applicants have cancelled claims 26-39, amended claims 1 through 25 and 40, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 102 Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,931,812 to Lipscomb

Claims 1 through 3, 8, 9, 13, 20, 21, 25, and 40 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Lipscomb (U.S. Patent No. 6,931,812). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 1 through 3, 8, 9, 13, 20, 21 and 25

Independent claim 1 is directed to a deployable truss. As amended herein, the truss of claim 1 comprises: a plurality of column members connected at their ends to form a deployable truss that forms a rigid structure in a deployed state and that has a stowage volume less than its deployed volume in a collapsed state, wherein at least some of the plurality of column members comprise column assemblies including a plurality of strut members, each strut member of an associated column assembly being connected to each other strut member of the associated column assembly at a first end of the column assembly and at a second end of the column assembly.

The Examiner cites Lipscomb as showing "a deployable truss comprising a plurality of column members[s] (figure 35 shows half of one column member) connected at their ends (figure 33) to form a deployable truss that forms a rigid [structure] in a deployed state and that has a

stowage [volume] less than its deployed [volume] in a collapsed state, at least some of the column members comprise column assemblies [including] a plurality of strut members (86) connected [to] each other at a first end (connected to each other through part 88, figure 35) of the column assembly and a second end of the column assembly (figure 33 and 38, an identical part that is connect to part 88 top of figure 35). (Office Action, pages 3 and 4). Applicants respectfully disagree with the Examiner's characterization of Lipscomb.

Lipscomb discloses a "web structure [that] includes a generally hexahedron-shaped frame having a plurality of points or vertices oriented in a manner that no more than three points lie in a common plane." (Abstract). While numerous geometric embodiments are described by Lipscomb, all such embodiments appear to be static structures in that they are not described as being in a "collapsed state" as well as a "deployed state." Lipscomb states that such web structures are conventionally used "for supporting, for example, trusses, floors, columns, etc." and that such web structures "form various lattices or framework that support underlying or overlying supports." (Col. 1, lines 15-19). Lipscomb simply does not appear to describe any of its web structures as being in a collapsed state. It is noted that, while the Examiner asserts that Lipscomb shows "a deployable truss that forms a rigid [structure] in a deployed state and that has a stowage [volume] less than its deployed [volume] in a collapsed state" (Office Action, page 2), that the Examiner does not cite any specific passage from Lipscomb or provide any other support for such an assertion.

Applicants, therefore, submit that claim 1 is clearly allowable over Lipscomb. Applicants further submit that claims 2, 3, 8, 9, 13, 20, 21 and 25 are also allowable at least by virtue of their dependency from an allowable base claim.

Applicants respectfully request reconsideration and allowance of claims 1, 2, 3, 8, 9, 13, 20, 21 and 25.

Claim 40

Independent claim 40 is directed to a deployable truss. As amended herein, the deployable truss of claim 40 comprises: a plurality of contiguously attached deployable bays forming a rigid space truss when in a deployed state and having a stowage volume substantially less than their deployed volume when in a collapsed state, each bay comprising a plurality of

column members, wherein at least some of the plurality of column members comprise column assemblies having a centerline; and wherein each column assembly comprises a plurality of strut members, each strut member being connected to each other strut member at a first end of the column assembly and at a second end of the column assembly, the plurality of strut members being substantially symmetrically arranged about the centerline of the column assembly.

The Examiner applies Lipscomb to claim 40 in the same manner as discussed hereinabove with respect to claim 1. The description of Lipscomb is also set forth hereinabove.

Applicants submit that Lipscomb fails to describe all of the limitations of claim 40. As previously discussed, all of the embodiments described by Lipscomb appear to be static structures in that they are not described as being in a “collapsed state” as well as a “deployed state.” Lipscomb states that such web structures are conventionally used “for supporting, for example, trusses, floors, columns, etc.” and that such web structures “form various lattices or framework that support underlying or overlying supports.” (Col. 1, lines 15-19). Lipscomb simply does not appear to describe *a plurality of contiguously attached deployable bays forming a rigid space truss when in a deployed state*. It is noted that, while the Examiner asserts that Lipscomb shows “a deployable truss that forms a rigid [structure] in a deployed state and that has a stowage [volume] less than its deployed [volume] in a collapsed state” (Office Action, page 2), that the Examiner does not cite any specific passage from Lipscomb or provide any other support for such an assertion.

Applicants, therefore, submit that claim 40 is clearly allowable over Lipscomb and respectfully requests reconsideration and allowance thereof.

Anticipation Rejection Based on U.S. Patent No. 3,221,464 to Miller

Claims 1 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Miller (U.S. Patent No. 3,221,464). Applicants respectfully traverse this rejection, as hereinafter set forth.

The Examiner cites Miller as showing “a deployable truss comprising a plurality of column member[s] (the columns are separate from each by the connecting joists at (109), one column having part (10) connected at their ends to form a deployable truss that forms a rigid [structure] in a deployed state and that has a stowage [volume] less than its deployed [volume] in

a collapsed state, at least some of the column members comprise column assemblies [including] a plurality of strut members (one of the three legs 102 of the column) connected each other at a first end (by part 16f, 16e) of the column assembly and a second end of the column assembly (same as the first end but on the opposite side thereof).” (Office Action, page 4). Applicants respectfully submit that Miller fails to describe all of the limitations of the presently claimed invention.

As amended herein, claim 1 recites that at least some of the plurality of column members comprise column assemblies including a plurality of strut members, *each strut member of an associated column assembly being connected to each other strut member of the associated column assembly at a first end of the column assembly and at a second end of the column assembly.*

Miller describes various embodiments of a tetrahelical structure. In one embodiment, Miller’s structure is formed by arranging multiple struts (e.g., 13, 16, 106, 107) to define multiple tetrahedra. (See, e.g., col. 2, lines 40-72 and col. 3, line 12 – col. 5, line 20). Applicants submit that Miller does not describe this embodiment (e.g., such as is shown in FIGS. 3 or 13-15) as being a *deployable* truss configured as recited in claim 1. Additionally, with respect to the embodiments described by Miller that is deployable (e.g., such as is FIGS. 8 and 9), Applicants submit that such embodiments lack the recited column assemblies of the presently claimed invention.

Regardless of which embodiment described by Miller that the Examiner considers, Applicants submit that Miller clearly fails to describe a column assembly including a plurality of strut members wherein *each strut member* of an associated column assembly is connected to *each other strut member* of the associated column assembly *at a first end of the column assembly and at a second end of the column assembly.* In contrast, the Examiner’s characterization of Miller as disclosing a *column assembly* with strut members only allows for certain strut members to be connected to certain other strut members at a single end of the column assembly. (See, e.g., Office Action, page 4 and Miller, FIG. 3).

As such, Applicants submit that claim 1 is clearly allowable over Miller. Applicants further submit that claim 7 is allowable as being dependent from an allowable base claim, as well as for the additional patentable subject matter introduced thereby.

With respect to claim 7, it is noted that Miller describes the entire *structure* as exhibiting a generally helical configuration (see, e.g., col. 3, lines 7-9), but does not describe any of the *strut members* of the column assembly as exhibiting a substantially helical twist *about a longitudinal centerline of the column assembly*.

Applicants, therefore, respectfully request reconsideration and allowance of claims 1 and 7.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,931,812 to Lipscomb

Claims 22 through 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lipscomb (U.S. Patent No. 6,931,812). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejections of the claims are improper because Lipscomb fails to teach or suggest all of the limitations of the presently claimed invention.

Each of claims 22 through 24 depend, ultimately, from claim 1. Claim 22 further recites that each of the plurality of strut members is formed from a continuous fiber reinforced composite material. Claim 23 further recites that the continuous fiber reinforced composite material comprises glass fibers. Claim 24 recites that the continuous fiber reinforced composite material comprises graphite fibers.

The Examiner relies on Lipscomb as applied to claim 1 and then states that it "would have been obvious to one of ordinary skill in the art at the time of the invention to modify

Lipscomb's structure to show the strut members being formed from a continuous fiber reinforced composite material, the material comprising glass fibers, the material comprising graphite fibers because" such material is "well known material for reinforcing a tubular member as it enables the member to [resist] bending and increase structural strength." (Office Action, page 5).

As discussed hereinabove, Applicants submit that Lipscomb fails to teach or suggest all of the limitations of claim 1, from which claims 22 through 24 depend. For example, Lipscomb does not teach or suggest a deployable truss structure that may be configured in a collapsed state and a deployed state, as recited by claim 1 of the presently claimed invention. Nor does Miller teach or suggest such a *deployable* structure that is formed of a material comprising continuous fiber reinforced composite material.

Applicants, therefore, respectfully request reconsideration and allowance of claims 22 through 24.

ENTRY OF AMENDMENTS

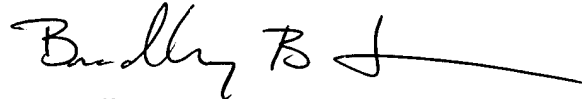
The amendments to claims 1 through 25 and 40 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1 through 3, 7 through 10, 13, 20 through 25, and 40 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Applicants further submit that upon allowance of independent claim 1, withdrawn claims 4 through 6, 11, 12, 14 through 19 should also be allowed.

Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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BBJ/ps:slm
Document in ProLaw

TITLE: DEPLOYABLE TRUSS HAVING SECOND ORDER
AUGMENTATION

Inventor: Murphy et al.

Serial No.: 10/734,726

Docket No.: 2507-7830US

ANNOTATED SHEET SHOWING CHANGES



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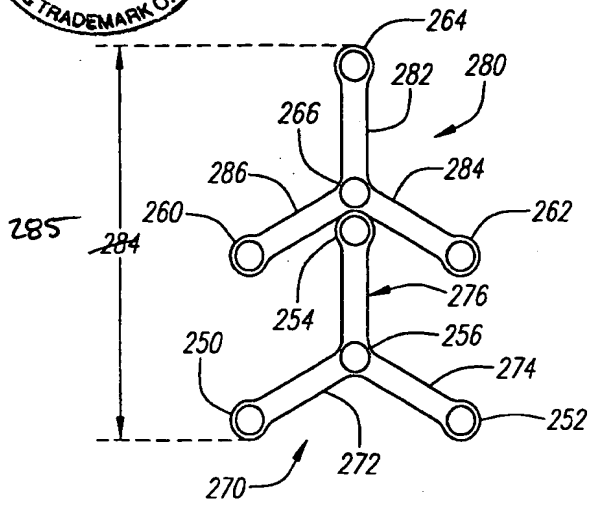


FIG. 6A

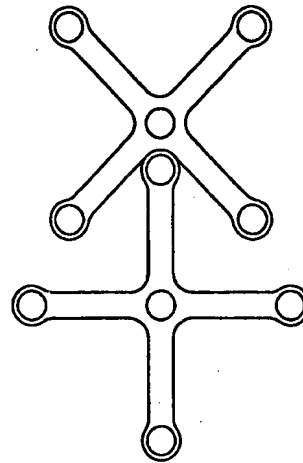


FIG. 6B

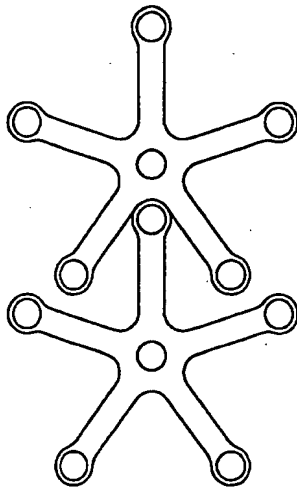


FIG. 6C

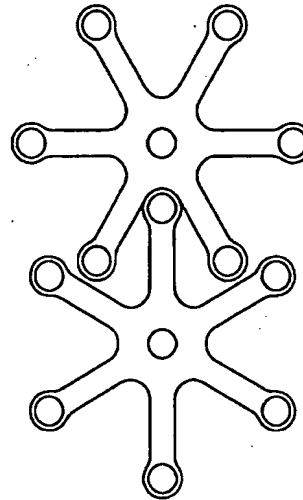
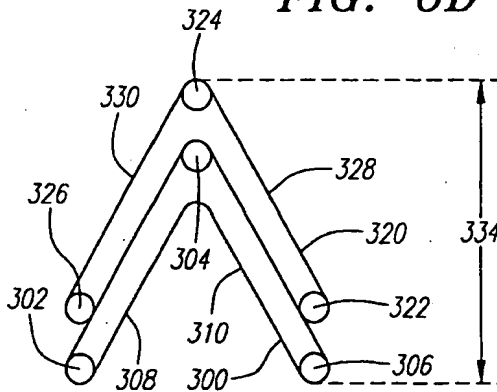


FIG. 6D

FIG. 7



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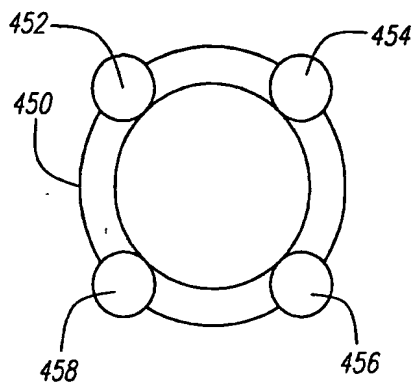


FIG. 9A

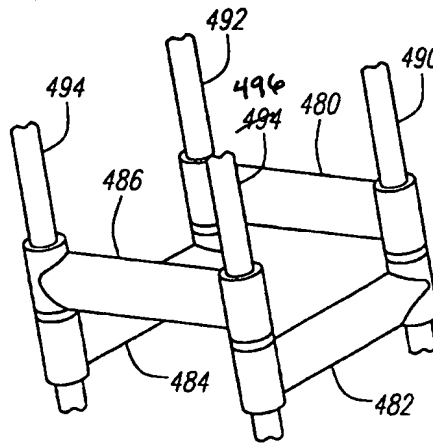


FIG. 9D

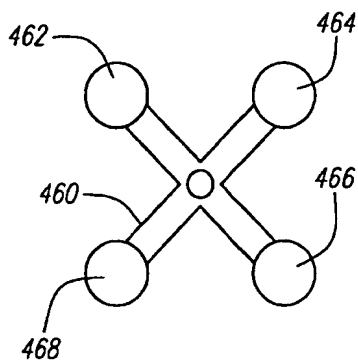


FIG. 9B

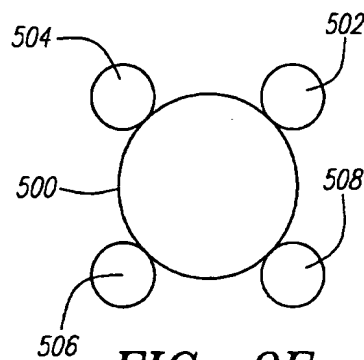


FIG. 9E

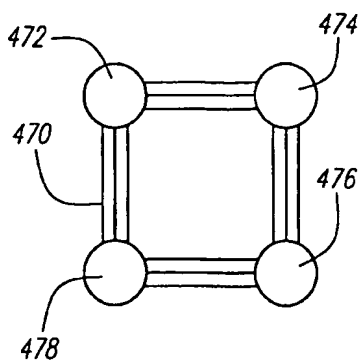


FIG. 9C

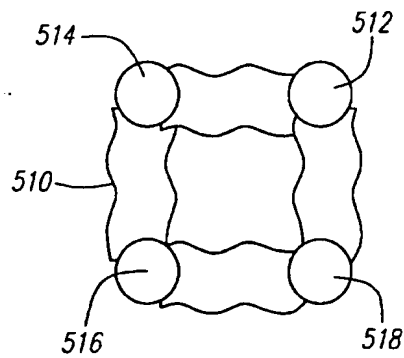


FIG. 9F

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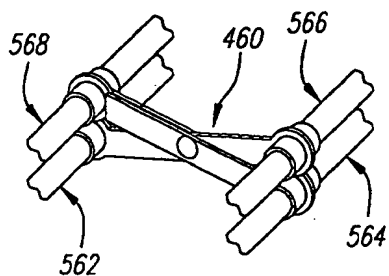


FIG. 10A

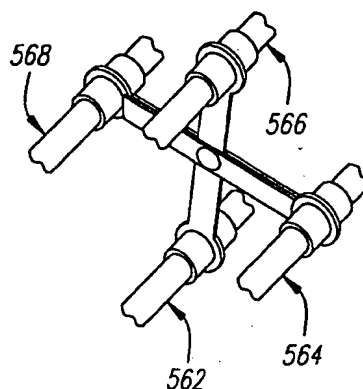


FIG. 10B

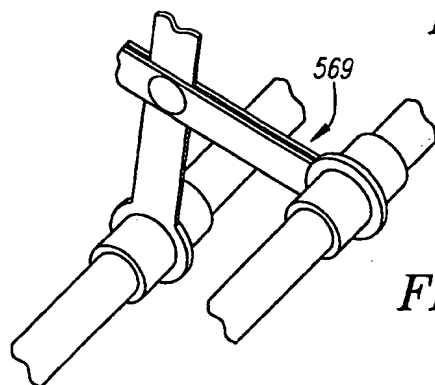


FIG. 10C

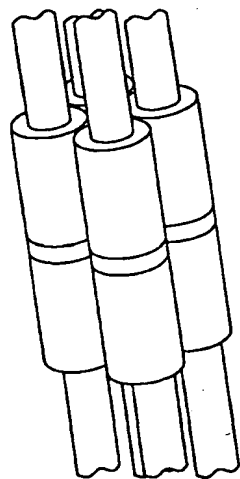


FIG. 11A

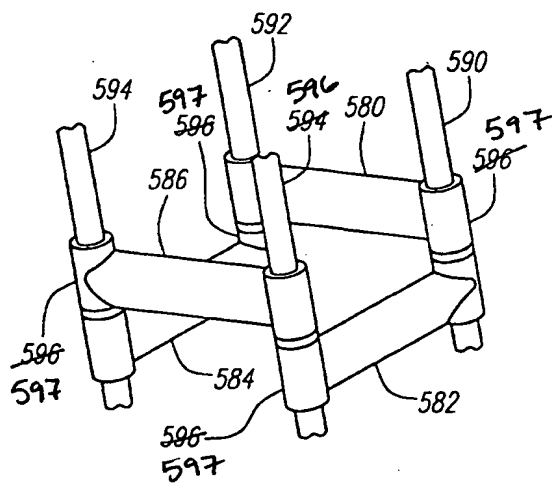


FIG. 11B